



High Performance: Efficiency Through Innovation

Kentucky NEED Conference 2015
3.10.2015



Presenters



Ron Murrell
Principal Architect
RossTarrant Architects



Paul Christy
Superintendent
Clark County Schools



Charley Wade
Mechanical Engineer
Shrout Tate Wilson

George Rogers Clark High



Capacity

1,900 students

Size

High School

256,477 square feet

Area Technology Center

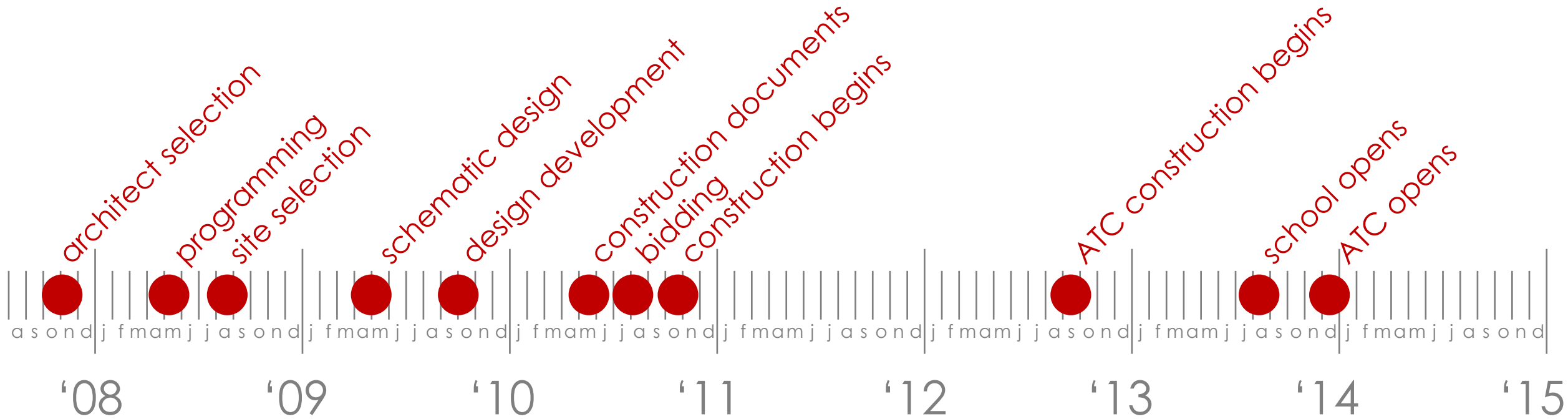
41,000 square feet

TOTAL

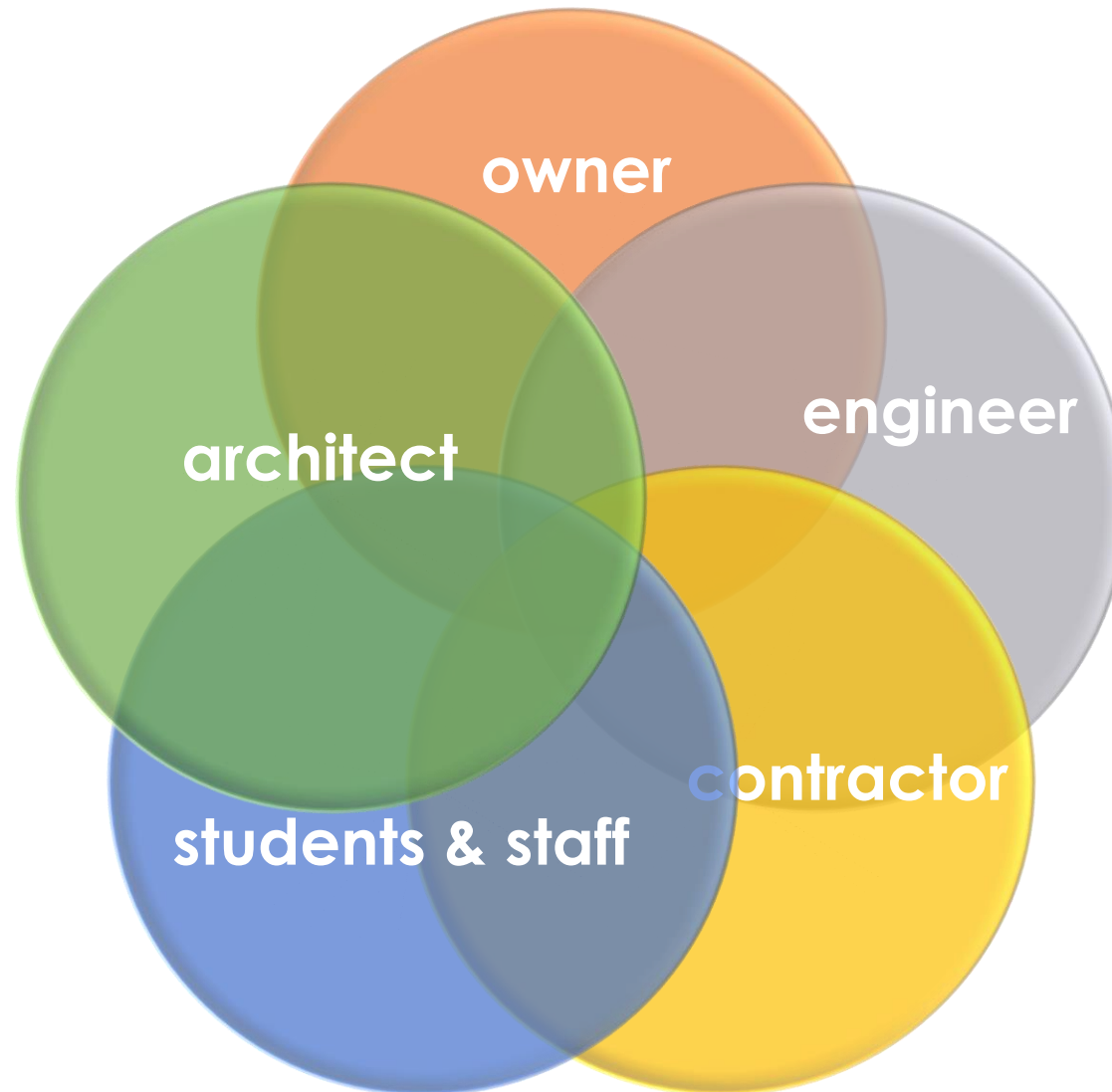
297,477 square feet



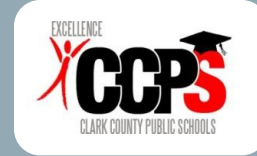
Project Timeline



Energy Efficiency Through Teamwork



Investigate Options



- Program
- Systems
- Materials
- Life cycle
- Maintenance



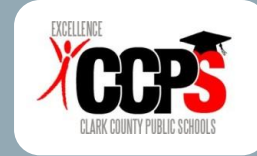
Building Features



- Solar Orientation



Building Features



- Solar Orientation
- Sunshades



Building Features



- Solar Orientation
- Sunshades



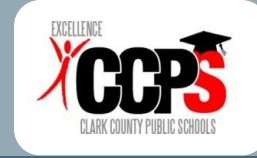
Building Features



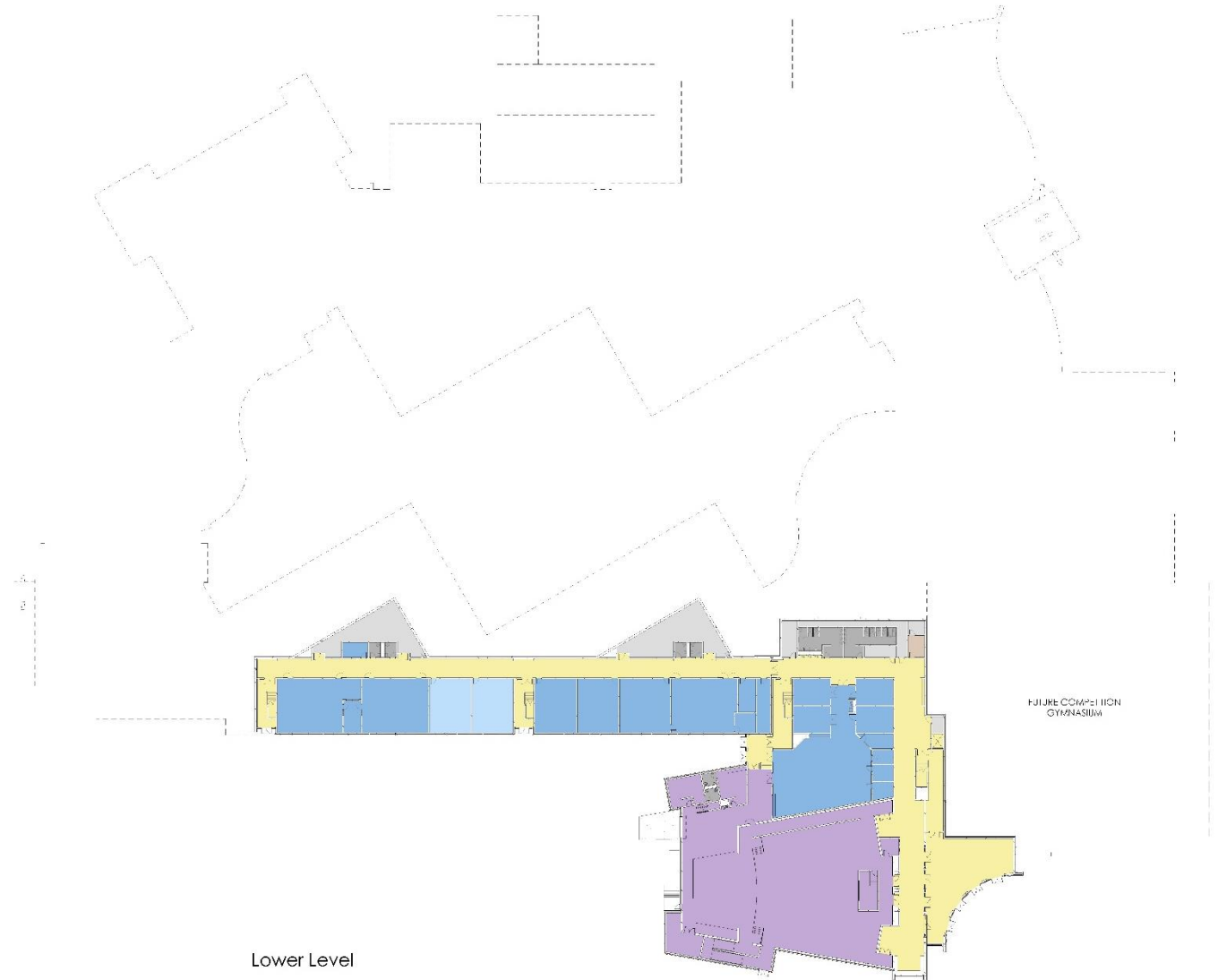
- Solar Orientation
- Sunshades



Building Features



- Solar Orientation
- Sunshades
- Topography



Lower Level

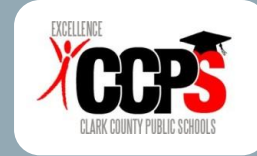
Building Features



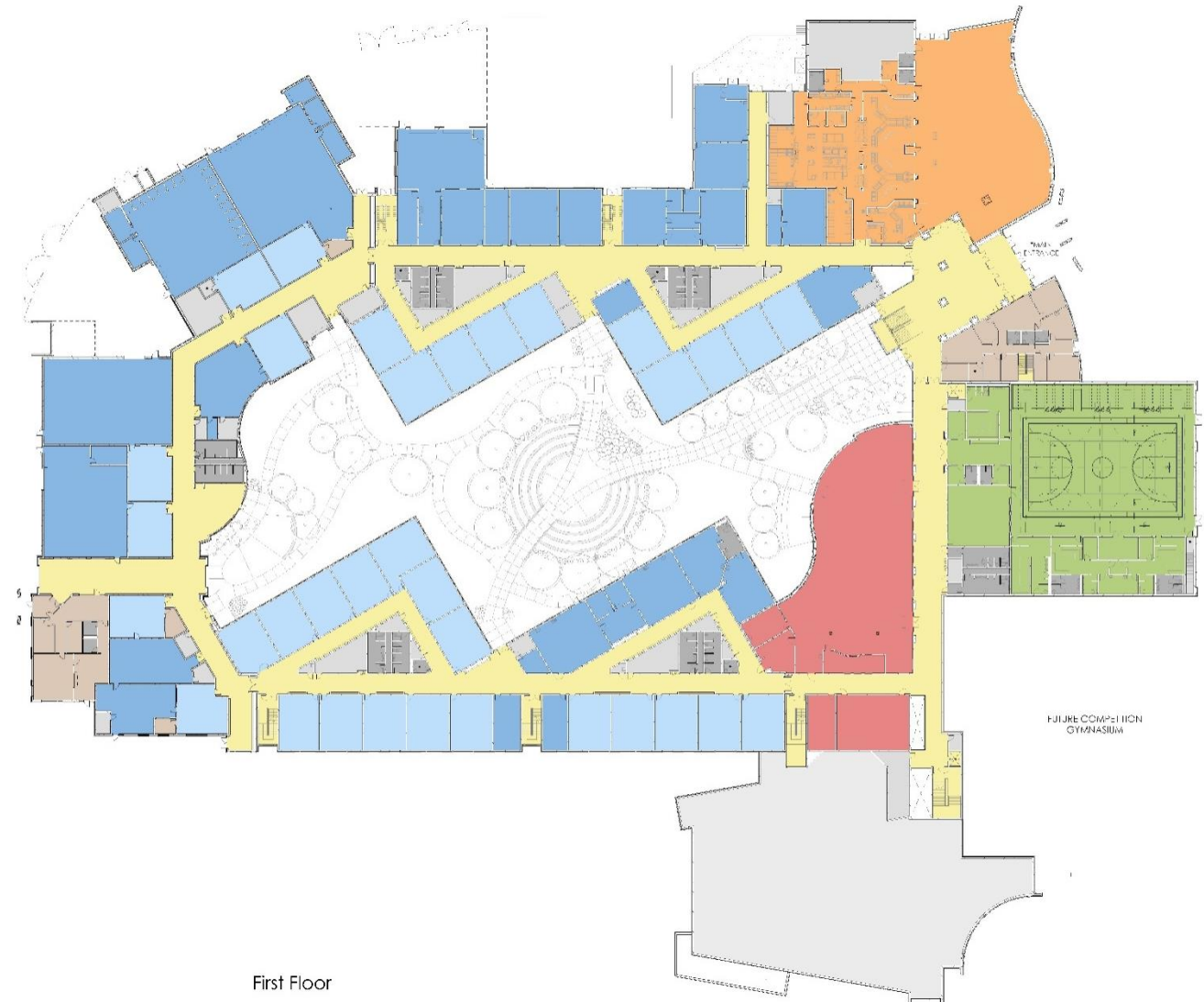
- Solar Orientation
- Sunshades
- Topography



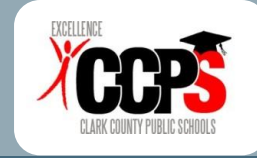
Building Features



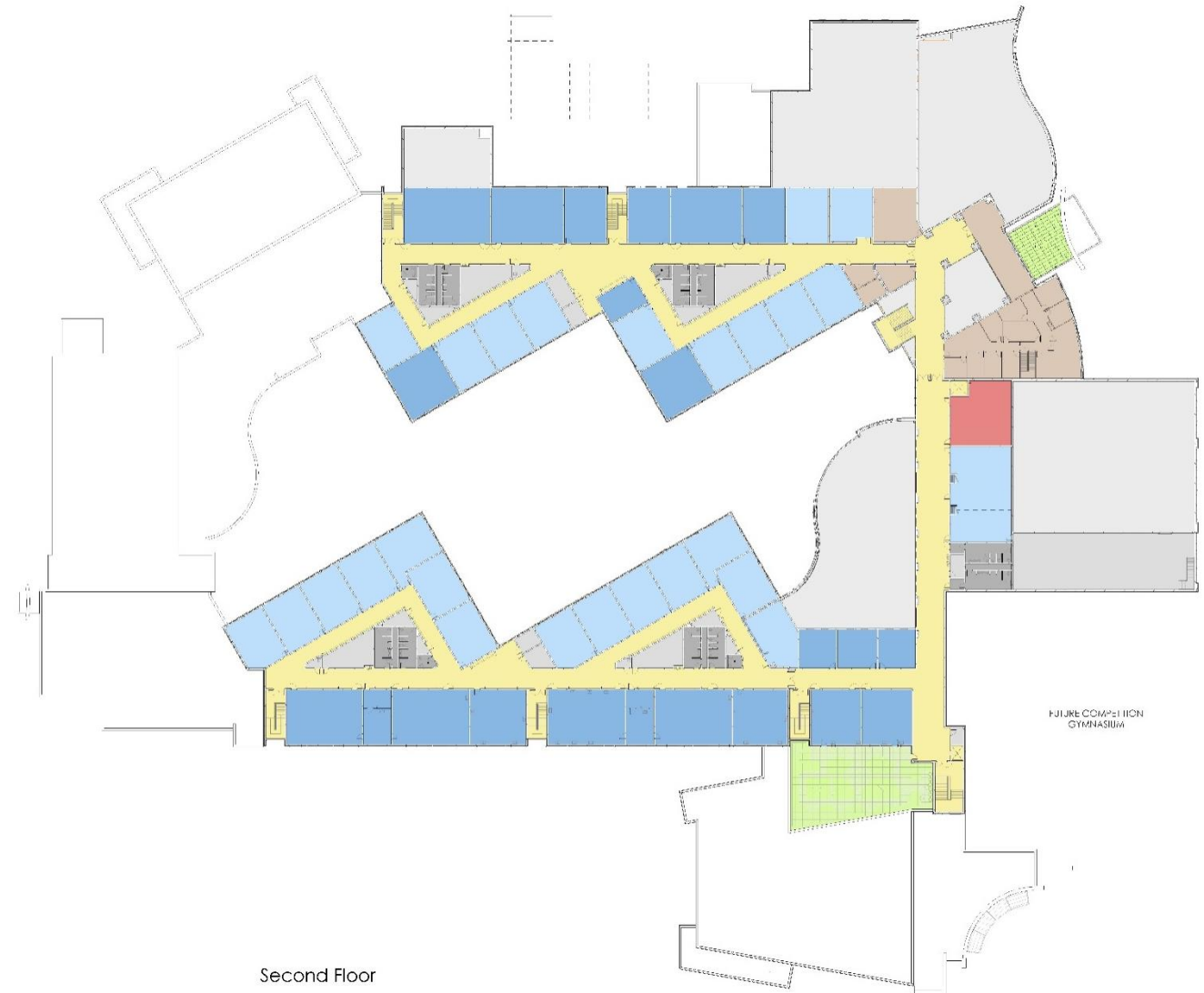
- Solar Orientation
- Sunshades
- Topography



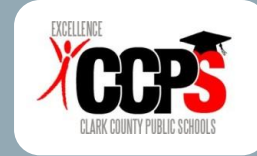
Building Features



- Solar Orientation
- Sunshades
- Topography



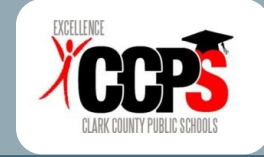
Building Features



- Solar Orientation
- Sunshades
- Topography
- Building Envelope



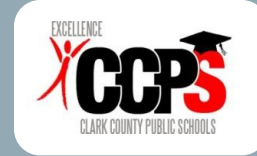
Building Features



- Solar Orientation
- Sunshades
- Topography
- Building Envelope



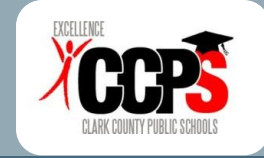
Building Features



- Solar Orientation
- Sunshades
- Topography
- Building Envelope



Building Features



- Solar Orientation
- Sunshades
- Topography
- Building Envelope
- Green roof with water catchment



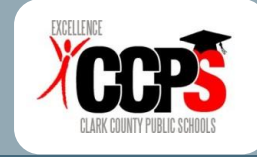
Building Features



- Solar Orientation
- Sunshades
- Topography
- Building Envelope
- Green roof with water catchment
- Solar tubes



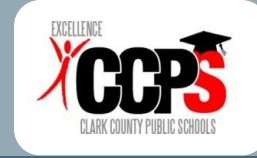
Lighting & Lighting Controls



- T5 florescent
- timers



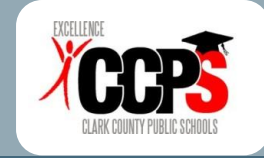
Hybrid HVAC



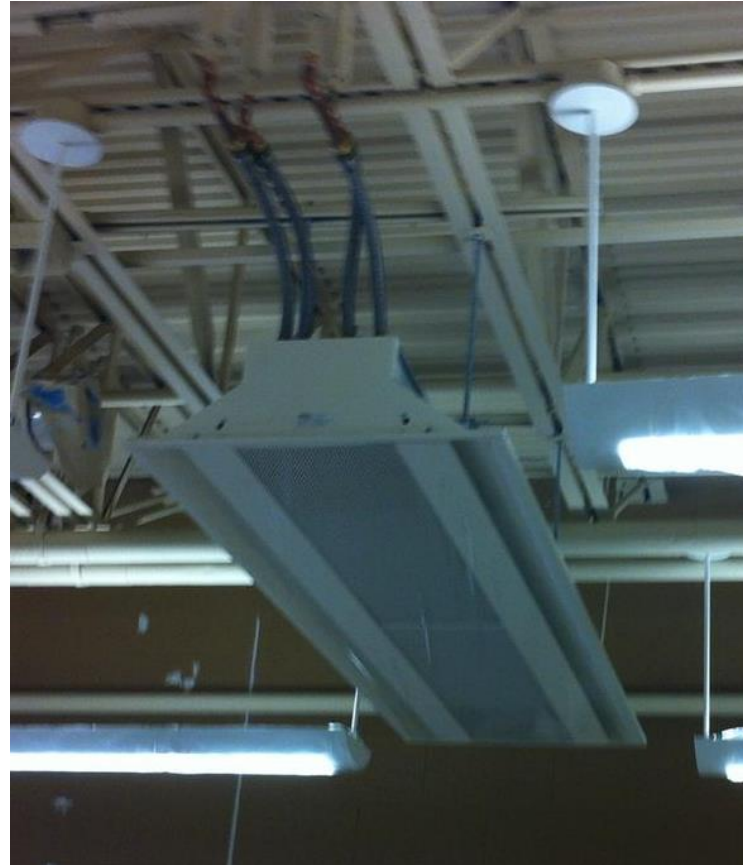
- Geothermal
- Cooling tower
- Chilled beam
- Humidity control
- Energy recovery wheel



Hybrid HVAC



- Geothermal
- Cooling tower
- Chilled beam
- Humidity control
- Energy recovery wheel



Results



	Energy Consumption
Average US School	73 kBtu/sf
Average Kentucky School	60 kBtu/sf

Results

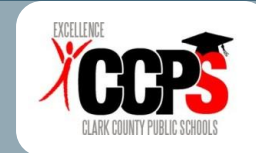


	Energy Consumption
Average US School	73 kBtu/sf
Average Kentucky School	60 kBtu/sf

High Schools typically consume more energy

- size
- after-hours use

Results



	Energy Consumption
Average US School	73 kBtu/sf
Average Kentucky School	60 kBtu/sf
George Rogers Clark High School	34 kBtu/sf

Results



	Energy Consumption
Average US School	73 kBtu/sf
Average Kentucky School	60 kBtu/sf
George Rogers Clark High School	34 kBtu/sf

\$92,000 savings in first year

Results



	Energy Consumption
Average US School	73 kBtu/sf
Average Kentucky School	60 kBtu/sf
George Rogers Clark High School	34 kBtu/sf

\$92,000 savings in first year
100,000 square feet larger

George Rogers Clark High



Capacity 1,900 students

Size 297,477 square feet



George Rogers Clark High



Capacity 1,900 students

Size 297,477 square feet

Cost \$47,051,500

Cost per square foot \$158





High Performance: Efficiency Through Innovation

Kentucky NEED Conference 2015
3.10.2015

